SEQUENCE LISTING

<110> YE, Jane et al.

<120> ISOLATED HUMAN RAS-LIKE PROTEINS,
NUCLEIC ACID MOLECULES ENCODING THESE HUMAN RAS-LIKE
PROTEINS, AND USES THEREOF

<130> CL001188

<140> 09/817,198
<141> 2001-03-27

<160> 33

<170> FastSEQ for Windows Version 4.0

<210> 1
<211> 3257
<212> DNA
<213> Human

<400> 1
```
tgcccgctgc ccgcccgcag ttcccggccc cgctggcccc agtcatggcg aagcagtacg   60
atgtgctgtt ccggctgctg ctgatcgggg actccggggt gggcaagacc tgcctgctgt  120
gccgcttcac cgacaacgag ttccactcct cgcacatctc caccatcggt gttgacttta  180
agatgaagac catagaggta gacggcatca aagtgcggat acagatctgg gacactgcag  240
ggcaggagag ataccagacc atcacaaagc agtactatcg gcgggcccag gggatatttt  300
tggtctatga cattagcagc gagcgctctt accagcacat catgaagtgg gtcagtgacg  360
tggatgagta cgcaccagaa ggcgtccaga agatccttat tgggaataag gctgatgagg  420
agcagaaacg gcaggtggga agagagcaag ggcagcagct ggcgaaggag tatggcatgg  480
acttctatga aacaagtgcc tgcaccaacc tcaacattaa agagtcattc acgcgtctga  540
cagagctggt gctgcaggcc cataggaagg agctggaagg cctccggatg cgtgccagca  600
atgagttggc actggcagag ctggaggagg aggagggcaa acccgagggc ccagcgaact  660
cttcgaaaac ctgctggtgc tgagtcctgt gtggggcacc ccacacgaca cccctcttcc  720
ctcaggaggc ccgtgggcag acaggggagc cggggctttg ccctgctgct gtcctctcgt  780
gtgatgaccc tattgagtat cagtagccac tactccccct gcctggccct gagagcggct  840
ctgctgtcat ctcaagcagc ccctgtcccc agcccgtcca ccctggagtg gtcttcttca  900
gcctgtttcc ccagccacag gcctgctacg accccacga tgtgccgcaa gcactgtctc  960
accatcccgc acccaccaga caacagccag ggctggagtc caggccactt tcagctgctc 1020
ctttctccgt gcatcgtgtc tcttctctgc tttttctctc ttccccact tctctttctc 1080
tgacccctcc cctccggtgc gtttcgtatc aaagctcctc aaacccgtc ccccgtgtgt 1140
cctgctgtgt gcagctcgct ctttccttcc ttcctaagct atccaagggg atggacccag 1200
gctcgtgggg aggttccacc cttggatcca ggaagaaccc tccacccgc ctcgtgggtg 1260
ggccaaaggc tacagggtgc ttcttcctct tcccccaccc ccactgtcc tcatgtgcca 1320
tgggcctgcc tccccagtga cctgcgaaag tggagcatcg aggtaggagg gaaacagcaa 1380
ccggggagtc ctcgagcctg gggctgccct acctctaccc attccccgac cagagctttg 1440
cccttgcttg gctgcccgcc tgcctctttg gggaactgag ctcagaggca ggtgcttcag 1500
agaaggaaac aaaatgaggg gtggcaggga taaaaagtca cctccattct ctacctccca 1560
tgcagcatga acacaatttc tctccacctg gctcccaaat ttaaagatgt ggaccaaggc 1620
ctgtgggtac tccaggggca aggagagccc tggggtcagt gacactgtca ggccaaccat 1680
gcactccaca aaggggagca tttggaaatg aaggactagc tcctatgtat caggttaaga 1740
gcaagggaga gctggccagg gacagcagtt tgcacagcag aggggaatgt agcaacagca 1800
gggcctccta ggccccatct tccatttctt aggtaagaag agcatttcct cagactccca 1860
ggcggaggac tgagcctagc cttcagcaac caaggttctc ctgggaccca aagtttatgg 1920
gagaagggca aagacttcat gggaagagag aaggaaggcc ctgggtagaa acgcttggtg 1980
```

1

```
ctgttctctt tggcctttaa dacaaagcgc tcatcttgcc ctctacctcc tgataggctt 2040
gagggtttgc caaccacact gtggctacag gtggagggaa gaggactcct tcctccagag 2100
tgctatgttc aggaagtttc tttaacccca tatggcccaa gagtagctcg taggaggccc 2160
tttaaagacg gaacaagtaa tttaccagtt ctactggggt tcctgcccac cgtcccaagg 2220
tgggcgaggc ctaggaagag ggtcattctt aagccacaca ttagctgcac tgcgtggctg 2280
cagccaaaac aaagaactgg gtgttgagta ttcatcaact aagaaccaaa atccagggca 2340
ctcatatgtg aaggataaga acctcacttc cttactcctc caaaaagaag tggggaaaga 2400
accatcaaac ctttcctcct gacttaccaa accaggaaaa cagcaggaga gggtggctca 2460
ggacttaggg acagggtata gcttagatgg tggaaagcaa aggagagcag gaagttgtaa 2520
atcactggct aatgagaaaa ggagacagct aactctagga tgaagctgtg actaggctgg 2580
agttgcttcc ttgaagatgg gactccttgg gtatcaagac ctatgccaca tcacactggg 2640
gctagggaag taggtgatgc cagccctcaa gtctgtcttc agccagggac ttgagaagtt 2700
atattgggca gtggctccaa tctgtggacc agtatttcag cttttccctga agatcaggca 2760
gggtgccatt cattgtcttt ctctcctagc cccctcagga aagaaggact atatttgtac 2820
tgtaccctag gggttctgga agggaaaaca tggaatcagg attctataga ctgataggcc 2880
ctatccacaa gggccatgac tgggaaaagg tatgggagca gaaggagaat tgggatttta 2940
gggtgcagct acgctcaccc taaacttttg gtggcctggg gcatgtcttg aggcccagac 3000
tgttaagcag gctctgctgg cctgtttact cgtcaccacc tctgcacctg ctgtcttgag 3060
actccatcca gccccaggca cgccacctgc tcctgagcct ccactatctc cctgtgacgg 3120
gtgaacttcg tgtactgtgt ctcgggtcca tatatgaatt gtgagcaggg ttcatctatt 3180
ttaaacacag atgtttacaa aataaagatt atttcaaacc accaaaaaaa aaaaaaaaaa 3240
aaaaaaaaaa aaaaaaa                                                 3257
```

<210> 2
<211> 212
<212> PRT
<213> Human

<400> 2

```
Met Ala Lys Gln Tyr Asp Val Leu Phe Arg Leu Leu Leu Ile Gly Asp
1               5                   10                  15
Ser Gly Val Gly Lys Thr Cys Leu Leu Cys Arg Phe Thr Asp Asn Glu
            20                  25                  30
Phe His Ser Ser His Ile Ser Thr Ile Gly Val Asp Phe Lys Met Lys
        35                  40                  45
Thr Ile Glu Val Asp Gly Ile Lys Val Arg Ile Gln Ile Trp Asp Thr
    50                  55                  60
Ala Gly Gln Glu Arg Tyr Gln Thr Ile Thr Lys Gln Tyr Tyr Arg Arg
65                  70                  75                  80
Ala Gln Gly Ile Phe Leu Val Tyr Asp Ile Ser Ser Glu Arg Ser Tyr
                85                  90                  95
Gln His Ile Met Lys Trp Val Ser Asp Val Asp Glu Tyr Ala Pro Glu
            100                 105                 110
Gly Val Gln Lys Ile Leu Ile Gly Asn Lys Ala Asp Glu Glu Gln Lys
            115                 120                 125
Arg Gln Val Gly Arg Glu Gln Gly Gln Gln Leu Ala Lys Glu Tyr Gly
    130                 135                 140
Met Asp Phe Tyr Glu Thr Ser Ala Cys Thr Asn Leu Asn Ile Lys Glu
145                 150                 155                 160
Ser Phe Thr Arg Leu Thr Glu Leu Val Leu Gln Ala His Arg Lys Glu
                165                 170                 175
Leu Glu Gly Leu Arg Met Arg Ala Ser Asn Glu Leu Ala Leu Ala Glu
            180                 185                 190
Leu Glu Glu Glu Glu Gly Lys Pro Glu Gly Pro Ala Asn Ser Ser Lys
            195                 200                 205
Thr Cys Trp Cys
            210
```

2

<210> 3
<211> 28770
<212> DNA
<213> Human

<400> 3
```
gctcaagatt gcacagctgg tgagtggtga cactgggact ggaacccaag tgtgccttac 60
tccagagccc ttggcatgca cctgaaaccc catgtaagcc cactgtggag acgcgcacct 120
cgaaataatg gaatccacta catcagttcc tttagctttc tgtgtaatca gagtagctag 180
caggctcggg atttcgcccc ccggcttttt tttttttttt ttttgagac agagttttgc 240
tcttgttgcc caggctggag tgcaatggcg caatctcggc tcaccgcaac cttcgcctct 300
caggttcaag caattctcct gcctcagcct cccgagtagc tgggattaca ggcaccggcc 360
accacgccca gctaattttt ttatattttt agtagagatg gggtttcacc atgttggcca 420
ggctggtctt gaactttttcc cctcttatta taattcagac acttaacctg aaatatacct 480
tttcaaatga agtaaatggg cttaccactt tccttgacct actattgaaa aatacattct 540
ccatccaata ttcagcctga aaacaggtat gtacatatat acttttcatt gctttttttt 600
tttttttttt gagacaaggt ctccctctgt tgcgcaggct ggagtgcagt gtcatgatct 660
cggctcactg cagccttccc ctaatgggtt caagcaatcc tcccacctca gcctctcaag 720
cctgggatta caggcgagcc accgtgccca gctaattttt ttttattttt agtagagact 780
gggtttcact acattggcca ggctggtctc cagctcctga cctcaaagtg atctgcccgc 840
ctcagcctcc caaagtactg ggattacagg catgagccaa cgcgcctagc ctttcattgc 900
tttttaaaga cctaataggc tagactttgc tctccctcaa tactcgttgg tagggatagg 960
caattttctc aactccggag agcattcatt tgcctctctc cggtgctaac acattcagtg 1020
gtaggaaact ggatcttgaa caagggccat tcattctttg gtgccactgg ctataccaca 1080
gagaaattta ggggtctgaa acaatacatt ggtcacctgg gcacctatcc taagcacctt 1140
agagggaaaa cggagacttg cccgcacacc tctaaaggat tttgcacttg gagatgttct 1200
tatggccatc tatctttcca ccctggtgga ggccgtgaat aggcattttc cccatttaaa 1260
gaaaaaatgg ggacgggggga gggccgtgac acagtcacac aggtaagggg cagccagatg 1320
gcagggaggg ggaattccac ccacactctc ggggactcat ggagacgggt gttcgaatcc 1380
agatcctgct caaggccttc ctacctcggg tgagcccagc tgaggtacca gccactgggg 1440
agcccggcca gatcctgcag atgcagggtg ccacggcggg cggaattacc ggcgccagac 1500
ttggggtggg atatggggag aagtggtgag cccggaaagc ggagcacggt agaagtgggc 1560
tgggtggggg ctcacctcaa ctcccccatt cggagcgtcc gcggaaaaac gaaaacgttc 1620
ccccgccccg ggcaggaagg ggttgggagg ggggctggc gccccgcccc agcgtcgcct 1680
gctcgatggg gtcccgctct cctgcgcgcg ctccccgccc cctctctacc ggggcggcgg 1740
cggcggcgca ggggaagggg cgggcagggg ccgccgccgg tttctcctcc caccgcctcg 1800
cgccagccca gccgagccga gccgagccga gcgggcgccg cgccgggctc ccgccgcagc 1860
cgcgcttccc ggcacccagc gagcgagtgg gcaggcgggc gggcgaggca gccgcggggg 1920
ccgggcccgg cgtcctcctc gccgcccgca gcgtccccgg gcgggcgcgg gccgcgatgg 1980
cagcggcgga gcagggctga gcccgctgcc cgcccgcagt tcccggcccc gctggcccca 2040
gtcatggcga agcagtacga tgtgctgttc cggctgctgc tgatcgggga ctccggggtg 2100
ggcaagacct gcctgctgtg ccgcttcacc gacaacgagt tccactcctc gcacatctcc 2160
accatcggta aggggcggtg gcccgggggcg cccctccctc ccgcccgcg gcccctttcc 2220
ccgccgcccc cgtccccagc tggggaggaa ttgccagccc ctccggctgg aggcggtggc 2280
gccggaggcc ggagtccggg ataaatctcg gggtgagcat aggttttggc aggtgagggt 2340
gtccctgctg cctgccgtcc ggaccagggg tggggtctcc cgcctcttgc cgggaagcct 2400
tccgtcccat caaaccgaga aaccgggggt gaggggagct ggtgtaggcc tgggtacccc 2460
gagctggggt agcaagaatc gtagccgctg gaataacacc cccacacccc caggggagg 2520
ggaagtaaag cttctgctac ggaaaagggg gtcagggtgg agaccggagt cactgaggcg 2580
cccttggttc tgtggtgacc caaggtggag ccggcggggg gcgagggggg aagagagga 2640
cgtacggagg ggccacaggg atcgagtttc cagggcagag ttgggaaggt aagccgcaag 2700
gtgggacacc tgggggagga cacagatagg gtgaggagcc cctgcgcctg gaagaggag 2760
acatctgttc tgagggaggc taaagaggat ggaggagtgt caggaatacc tgcccagacc 2820
aaggggtcag aaggcaggca ggacccgcct gagggcatct ctcatctggc agtgctggag 2880
cctgtggtta gagggacaag acccggtggc atcccagaca gcactatgat ggggtcactt 2940
```

3

```
attctaggaa tgggtccatg gcctcccctc tgagacagtc agtctcccgc ttctaggctg 3000
tgaggggccc cctccctgag aagtctgagt agagggaatt tcatcctcag ctgctacccg 3060
ggtcagccct ggagtagcct ctgcattgcc caagcccctg gaaacacctg ctggctggct 3120
ggtcatccat ttggaatgct ctcctagaag tccctgctgc catcagggat gggcaccagc 3180
tctcagcttc ctcttgagga ttcatgtcca caccatcccc cctcccccca acacacattc 3240
cttgctgaga gagaagtagg agcagataga tacagccagg aggaacagaa ccttctggtt 3300
aagaagccag ctttattgtc caagagacct gagacctcac tgtggggcaa agcaaccttg 3360
aatattgcct aaacttctga gctttatttta gtttctcatc tgtagaacgg gtataataat 3420
tgcacctacc tgccaagttg ttgtcaagat taaatgagat aacgattgtt aagtgcttag 3480
cacagccaga cacatggtga agctcgataa atgctgattg ttcttactgc tattgccatt 3540
atcattgagc tttttagggtc tcctctcttt gtttcaccaa cttgaagggt gaaacaacag 3600
gacttagggt cagggaacag aacttgtccg tctttctcag aggagctgta aggccaactc 3660
ttaggaaacc caggagcttg ggctgagcca tggtttggat gagagacatt gcagaaagaa 3720
ggggagccta tagacactaa ggctttgtgc ctgccgggag gacttgggga agaggcaggt 3780
gcaggagaaa ggcatgggcg tgatggagga agtggcagag gaaccagatg gtgtatgagg 3840
acaggttgtg ggctcaggga caaagggcgg tgggttatcc cttaaggaaa ctaggagtgg 3900
ctatttttgg gagaggcctg gtgcttggaa ctactgagct atctccagag agctgtgggc 3960
tgcctgggag ccctggctt tggcctgaag agctgttgtt tgcacctgct ctcctagtcc 4020
cattccaagt cctataggtg acatggactt ttccctttga gggcttcatt caaccacctc 4080
atttcagaag ctctgggact cctgcttagt gctgtgggag gcagcctccc ctgggagaca 4140
cataccctcc tttttgaggg cacccctctt tctaaaatac caggatggcc ctctgaggct 4200
cgtgctctcc ttaaagagag tccattgcct cacacctcta atcatccacc cttctccttg 4260
tcccttcccc ttgtaatctc ccttcttaga caccttctgc taataggtga acactaaata 4320
ggtcacaggg acttcctgaa accctccagg gcagaccact ttgggcacat aggtgaatca 4380
gtgaactgag taggggtgtc tctgcagcac tgtctcccct caaggccctt ggtatattgg 4440
cctaaaacct aaagatggct cccagatttc ttcctccgct tctgacaccc gggttcccct 4500
ttctacagga cacagaggat tctctagggt cccccttttcc acaggacaca gaggactcta 4560
ggagtttgga ttccatggaa tagaaagaaa cctgtctttc ttcacaccag ccttttaaaa 4620
tctgccccac tgggtatctt aaatgctttc ttatttaaag cttattaagg gacttgggat 4680
tctcccttat cttgggcgtg tttttcagca ttaactaaaa cttaaaggaa agagttggat 4740
ggtcaagaaa agctttttcc ttaagtgata tggacagttt ctcaaggagg tagaaggggc 4800
agccaggaga caaatcaagg agccaacgaa atgagtgcta ccaagtcata gtcattcgct 4860
tatttttaaa aaatgcgtgt cctgtatgcc aggctctgca ctgagaccga gagattccaa 4920
gatgaataat acctacagtc actgttctca aattgtgcat tacctaaaac acattacatg 4980
accatgctgg ccactgatcg aggcacctttt cccaggggct tttttttgtga attaagaaaa 5040
caaggtaatt caccagttat tgccaagata gtttggcttc ttggctcatg tggatatcac 5100
ctaggccagt acttttgtga tttactgtgt actccacttt aacggcctgc gatcttctag 5160
agaagaaccc gccagggagc agtgagaggc ctccctggta gactgagaca ctgactgtcc 5220
ctccccctat cctttttcgtc tttctggcca gcagaccagc aggtggccct gccactggct 5280
ctgccacagg catttccttt ctgtgcagct gtgctggcct ggctgggggt tggtgcgaag 5340
gggtccccaa aatactacct taaacaaatt aattgagcat tcactaccaa gctctgtgcc 5400
aggcatttta gagacatatt gcagtctacg ttttctgccc acagaagccc ataacctaga 5460
tggggaggca agacaaaggg aaaaacaaaa aacaaagagc tagtgccaaa atgagatatc 5520
tgaaagaact tggtgaatca ctcttcaaat gtaaaggatg gattatgatc attgcagtta 5580
ctcttaatga aggtctcaca gtgggtatca gaagctaaat tatgatgcaa gatgtaccat 5640
gaggcagccg gagaatggcg atggatggga tgggtgagtg ctattcccac gactccatgc 5700
tgtcggaggc tggggaagag agaggcccct gtggactaga accggcaggg aaggctgaag 5760
ctaggcctca gtgtgggctg ctcgtcagtt cctgcagcag aagggagcag atggagtaac 5820
atgagcagag ataacagagg tgggattgag taggtgtccg tggggctcta ggcagtttag 5880
atgcaacaga agggattctt caggaaagtg agaagattct tctgtttctc tctctgtctc 5940
ccaaattata agtgccttga tggtgcgacc aaatcttatt cctcattgtt tttatagtcc 6000
ctagtacagg gccaggcaga ttcaatgcct gttgttaaat taatgaatga atgcagggac 6060
cagttggcag agggcattga gagcctggcc aaggaggtgg aacatgagcc ttagcaatgg 6120
taggaggggt tttgagtagg gtactaatga ggttggctgg aagaaggggt taagacttga 6180
agcagggaga ctagtcaggg gctgcagtag tatcctgggc atgaaggaac ctctgaatgg 6240
cccctcaccc ccagtggtac caacaccaac ttccacacag tcagttgttc tactttccct 6300
ccagaatggg gagtggttca agccaatcaa cctggcaact tctgaaagaa tcttatggga 6360
```

4

```
cctgtgccat gaccaggtag ggagaagatg tcatacatgg acatctatgt tcaggggacc 6420
tttgaggacc tttctgcatg gtggccagga gtgagatgat gtaaaccaca aatggaaact 6480
gaagagactg ctcaggagtt gttggttttc ttttcttttc tatttttttt ttttgagac 6540
taggtttcac tctgtcaccc agtctggagt gtggtggtgg cacaatcacg gctcactgca 6600
gcctcgatct cctaaacgca atcctccac ctcagcctct caagtagctg ggactacagg 6660
tgcatgccac acattcagc taatgtttgt acgttttgta gagatggggt ttcactatgt 6720
tgaccaggct ggtctcgaac tcctggactc gtgatccacc agcctcagcc ttccaaaatg 6780
ctgggattat aggcgtgagc tacctcactc cctcaggagt tggttttctc cctcccatcc 6840
ttagtcttcc ctgagtagac ctgtcaccta gtccctggac cttttgtttt gaaagccacc 6900
ctccaggcta cactccttct gggtgaggag gagggtgatc tggttggaca ggttgggctg 6960
ctgtggcttc agggcacttt ctcaggctgg gttgctgctg ctatgtcacc tttctcaagg 7020
agttctgctg ggactggctt ggctgcctgt cttgactttg cttttgactg aggaggtggg 7080
agatggtgag ggaggggggtg gggctagatc caagcctgga atggggtgac ctaacagaca 7140
ctggggcctg tgcttagaca ctaggatcct ggggtttgca ggtttctaga ctgagaggag 7200
ctgggggcaa atgcagtgtg acgttgtgag agggtcaggg ctgggtctgt gtcagccttc 7260
aggcagcctg agaccagtct ctacctactc tgttcccctg gtacctagaa aggaagggaa 7320
ggtgagaagc aatgagcaga atggaaagag cccagattaa catgcacatt tcccatggcc 7380
ttactggccc tgtgaccttc agacactttg atgacatctt tgtgcttcgt ttctgcatct 7440
gtaaattgaa gatggtaaca gagtctttct taaaggttgt tgtgaagatt atagagccta 7500
gcgcatataa agcacttggc agagccctcg ataaaataat agctgctatc atattatcat 7560
tattattatt ttatttattt atttatttat tttttttga gaccgagtat ctctctgtcg 7620
cccaggctgg agtgcagtgg cacaatctcg gctcactgca acctccatct cccgggttta 7680
agtgattctc ctgcctcagc ctcctaagta gctgggatta caggcaccca ccaccacacc 7740
cggctattat tattattcct agctataaga atgctgtaga gatgaataca ctgtcagtga 7800
gctaggaggt catcctgtgt atccatcact tgtgcactca gtcgttcagg cgctatttgc 7860
tgaacaccaa ctacatgcca ggtgccatgc taagatttgg ggacacagtg gtgaccaaaa 7920
cagacagaaa ccaaggagct ggcttacatt ccaagggagt gcataggaag ctgtgtttca 7980
tttcagtttc tgctctagta cccccctttc cctggcagtg ccagggtctg agaaggaaga 8040
gtgaggtggt gaggaggtgt gaagcagtgg ggtgacctga gaggagagga tggggtggct 8100
ttgcctcaag gcttgggccc ctgctaggtg tcgctctgcc tcaggcctct gtttctcctc 8160
ctgacacagg cacagactcg gcctcccacc ccttccccaa ggacatgacc ttgggaagga 8220
acatatctga agcccgcgga gggtttccgc tgctgtgcat ctgtgccaca gatccgcaga 8280
tgcacccaca gctgggagca ccggttcctc ccgcctacct gcactccctg gtttctgttc 8340
cttcctcctc ctccttcctt ctccccgctc cccagacagg ctggtgatga gctttataac 8400
atgaaagctg atatttggcc attatccttc taccctgatt gccagctctt ctcagagtgc 8460
cttcttctgt aatccaatct ttgcaccagt ttccctgtga aactgccagt tttctgtata 8520
ggcctctgcc ctctccttgg ctcttctctc tggtcagtga gctttgtcaa ggggaacaca 8580
gggcttcctg gacacgtaat tcctcccact gaggaggaag gggctaatca ccagccctgt 8640
tttattttat tttattttttt tgagatgaag tctagctctg tcgcccaggc tggagtgcaa 8700
atggctcgat ctcggctcac tgcaacttct gtctcccggg ttcaagcgat tcttctgcct 8760
cagcctcctg agtagctggg gattacaagc atgcaccacc acacctggct aattttttgt 8820
gtttttagta gagatggggt ttcaccatgt tggccaggct ggtctcgaac ttctgacctc 8880
agctgatcca cccacctcgg cctcccaaag tgctgggatt acaggagtga gccaccatgg 8940
ctggccgacc ccatctctta aaaaacaaa aagaaagaa aagaaaacaa aacaaaaca 9000
ctttttaaat taactgatta tggtggcatg tgcctgtagt cctaactact caggaggctg 9060
aagtggaagg attgcttgag cccaagtagt tggaggccac agtgagctgt gatcacacca 9120
ctgtactcca gcctgggtga cagagtgaga ccctgtctca ggaaaaaaaa aaaattactg 9180
agaactctgt gaccatggca ccatgaacta tagaaagggc taacagttgg ctttgaaatg 9240
tgggttatgg ctgggtgcgg tggctcacgc ctgtaatccc agcactttgg gaggccaagg 9300
tgggcagatc acaaggtcag gagtttgaga ccagcccggc caacatagtg aaacctcatc 9360
tctactaaaa atacaaaaaa ttagccgggt gttgtggcag gtgcctgtaa tcctagctac 9420
tcgggaggct gaggcaggag aattgcttga acccaggagg tggaggttgc cacaagctga 9480
gatcgcacca ctgcactcca gcctgggcga cagagcaaga ctccatctca aaaacaaaaa 9540
taaaaacaaa aaaagtggt ttgtttttctt ttcttctttt tttcttttttt tttttttttt 9600
ttttgaaaca gagtcttgct ctgtcaccag gctggattgc agtggaggat ctcagcacac 9660
tgccacctct gcctcccagg ttcaagtgat ttccctgcct cagcctccag agtagctggg 9720
actacaggca cgcaccacca cgctgggcta agttttttgta ttttagtaca gaagggggttt 9780
```

5

```
caccatgttg gccaggatgg tctccatctc cctgacctcg tgatccgccc acctcggcct 9840
cccaaagtgc tgggattacg ggcatgagcc accacgcccg gcctaaaagt gggttatttt 9900
ctaattgctc ttccctgatt aaaattttct ctttgcccat cttttctcta gatatgtact 9960
gacttcattc atccatttat tcgtctcact tgctcattca ttttttgcttt catttactct 10020
actttgttga ataatattta gtgatctacc tgctgccagg cagtgagagt ctgaagtgaa 10080
caggatgctg ctttgccctc tgggagctta cagtgtagct gggaaccaga catccaaaca 10140
agcagaatat tatgcaaaag aaatgtcagg atgctttgga atcacagagg agtgagaaat 10200
ccctcccggg gaggctggtg aaggctttga agaggaagtg acatttgagt ggagtcttga 10260
agactaggca ggattctcca ggggccctgg gtgtggggga agcacacatc ctcttccctg 10320
taggaggtgc tgtggagaac acctccagtg gggctgctac tcttcagcct tgctggggcc 10380
agctggagtg gccacaccat ggtcacacca gctgaagttc aagaagcccc ttgccaggag 10440
attgctttgc tggctctggg tgagggcagg tgcatctgga agccccttc tttctaagat 10500
gtttgctcct gagtttctat gtcctagtct tttcttccct gaaccttttg ctaccagtca 10560
gcacagccct gcctgagaag gaggctggag gagtgagtgg tcagtagcct ggtgggtctt 10620
ggctgcctct gtggtgcccg ctggcctaag tagcaggctt agggaggcga gacccagttc 10680
caggggctgc caatggggag cgagatgggg tggctggagc acactgcaca tgtcaccaag 10740
gctctaggga ggtctgtgca caaggcagtg ggaaaagcaa ggggaagacc cagcctggtc 10800
aacatggtga aaccccgtct ctactaaaaa tacaaaaatt agctgggtgt ggtagagcac 10860
gcctgtagtc ccagctaact tgggagcctg aggcaggaga atcactttaa cacaggaggt 10920
ggaggttgca gtgagccgag atcgtaccac tgtactccag cctgggtgac agagtgagac 10980
cctgtctcaa aaaaaaaaa aaaaaaaaa aaaagtggg gaaggggaac actgatcctg 11040
attatctact ccatatactt actatgtacc tactacctac acagggacgg tgggctttac 11100
gcatgccatt tattcagtgt atagagatct cagcatcaca taggagcagg gagttctgaa 11160
gttggccttg ctggcatttg agaagtttct tggtgtattc ttcaggttca cgcctccaga 11220
caagtgtaag tgctattgaa tgctgactat gttccaggaa ctaaaccaga tgctagaaga 11280
cacgcagtaa acagtacaga tgcaggtgca catgtgaggg tccacacaag acctgagaga 11340
agggagggt cttgctgcag ttcccctttt gtaacaaagg agagagtact gttgaccctc 11400
ttcctaggaa ctgtgagttt gactgaaatg tgtcctgcca caggatcttt gctgcttcct 11460
ctacctgatt cttttggatct ccctgctggc accttcttgt catttaggtc tcagctcaaa 11520
tgttacctcc tttaaaatgt cttctctggc cagccagtct aaggttgctt gtgcttgggg 11580
tctcctcact ctctacttta tcccgcagtt gcttcttatc acatatggct ctctgaaatt 11640
aggtattcat tacttacatc tgtcttcccc actagaatta agctctgatg acaaggatct 11700
ttctgtgctg ttcatagctt atcttctagt acctggctta gttcctggca cattgtaagc 11760
attcaataac agtttgaatg aatgaattaa caaatgaagg aatgaatgaa tgcatttcc 11820
tagaggactt ctgttcttcc ctgagggaag ttataggtcg tattggtttc ttgggactgt 11880
ttttttgtttg tttgtttttgt tttgtttttt gagacagagt ctcactgtat cccccaggct 11940
ggagtgcagt ggcacaatct tggctcactg caacttccgc ctcccaggtt caagcgattc 12000
tcatgcctca gcctcccgag tagctgggga ttccaggagc ctgccaccac gaccagctaa 12060
tttttgtatt tttagtagag acaaggtttc accatgttgg ccaggctggt cttgaactcc 12120
tgacctcagg tgacctgcct gcctctgcct cccaaagtgc tgggattaca ggcatgagcc 12180
accacgcccg gcctgttttt ttttttttt taagacagag tcttgcactg tctcccagac 12240
tggagtgcag tggtgtgatc tcagctcatt gcagcctcaa cctcctggcc tcaggtccag 12300
gtgatcctct tacctcagtc ttctgagtaa ctgggcccac tggtatatac caccacacct 12360
ggctaatttt taaatttttt gcagagacat ggtctcacta tgttgccctg actgatcttg 12420
aactccttgg gttcaagtga tcctcacacc ttggcttccc aaagtgctgg gtttacaggt 12480
gtgagccacc atgcctgggc ttgagactgt taagatgatg aggctggagg gagtggatgg 12540
cctcactgct tgagccctag agattcctta ctccagagtg ccctggctgc agaggtggcc 12600
ctggagggtc actccagcaa cctggctgag ctgatgggca tcatctgata ccagctctga 12660
ccctgaataa taggcaacat ggaccttagt ctaaagcact gaccctcat ctctgcatat 12720
accaaagaag atgagatttg ggtgaggaca cagccaaacc atatcagctc ccgggatccc 12780
tgtgtgaatg gggtcttttt tggtgtttga gggctgcaca gggtgacctc tttagaggtg 12840
acctcctgcc acaacccaca ggaggtgcac atggcccaca catgctggtt tcctgcagtg 12900
ggaggggctg gggcactcct gggacctgtg cttggtaact ggagctggcc tggccctggg 12960
gattgggtgt ctgccttggg tttcaggtgt attaggttgt tcctcgttgt ggagtctcat 13020
tactaatgaa aagttcaggt cgcactgctg gtcctttggg ctgtggttga tcctggtgat 13080
aacatttggc acccagaggc agccctgttt ccactgaagc atgcggagct ggctggcag 13140
gcaggcaagc tggcagctgc ccttaaccca tgaggtgctg gccgctagt aggcacaccc 13200
```

6

```
tacctgtgcc agaattgagg ttgtagccag actccaggag ccatctgggc cccacagggg 13260
gcggcatttc ctcttttgt tgaaacattc cagccaagtg ctggcttggg cttcatctct 13320
ctgtcccact ctccttcctc tccccaacat aagcctcctt ctacatccta gagctctttc 13380
cattccccct cctgcagctc tgggctcgct aatctcatgc ttccctaagg gagcttgacg 13440
gctgcttctg ctaacattta ataaagttct gcgtgccaga ccctgtgtta tgggtttac 13500
accttatctc acaatcttaa aaaaaaaatt ctctgagaat cctctgtcac ccccacttta 13560
caggtgagga aactgaggca aagataggct aactggcttc cccaacacca tgcaggtaat 13620
tagtgataaa ggcagggttg gaaccaaact tgacctccca attgtgctct taatggccag 13680
gacactctgt gtcttgagcc acacttcctc catgttttct agggctttct agggaggcag 13740
acagtgatgg gaaggggtgt tctttagtgt ggatgtgccc tgcctgctcc tttctgtaag 13800
cgtcacagca cctccactgc tgtactgggg aggcaccaag ttttttccctg tttgcccacc 13860
caaggcgagc tagcttagga gtcacgtgag tgctgggtgt ctcgcctgct gcatccctct 13920
atcctgcccc tgcccccggt gcccagagga gggccctgcc tgtcttccca gttctccaac 13980
agcagcgctg tcccagcacc ctcgggctcc agttgtggcc tggcagctgc tggggcagac 14040
accatacaga cagagtcaca gcaggaagag gatggggccc agggctgctg cctcaggcca 14100
tggctgcatg gcaccatcag ttgattgagg agcttttctt gccaatgtct gaggcatcag 14160
gtggcaggac acgtctccct gctcttaagc ctcaggcatg cagcccttct tatgctctct 14220
ggggtgaggg ggagatcccc ctcatggaat tgctttttt tttttttttt tttttttgag 14280
acagggtcct gctctgtcac tcaggctgga gtgcagcctc aacctcccag actcaagtga 14340
tcctcctgcc tcagcctccc gagtagctgg gaccacaggt ggacaccatc acacctgggt 14400
ttttttgttt tttgttttt gtttctaga gatggggtct cacttcttg ctcagtctgg 14460
tctcgaactc ctgggcgcaa gcagtcctcc cacctcgtct tcccaaagtg tttggattac 14520
aggtgtgagc cactgtgctt ggcctttta tttatttaga atttgttttg gaattgcttc 14580
tttatgcctg gcactatgct ggcactatgt ggcagagatt ttaaaaacga gcaaacaaaa 14640
caaatgcttt gtcaaccaca aaatgtattc tctgccctt aggttctttt tgtgtagttg 14700
aggctagaag acaaaaatag ggggcagtaa ggagcaggga gcgatggttt aggaggtctt 14760
ccttccagcc cccttgttga agcatctggc tcactagctt gggggagcca ttaggcagca 14820
gtggccaatc ctgaggcact ctcaggtgtc actaagaaaa ggggcatgtg ctctatggat 14880
acccatgggc tgaacttgga gtctggtctg acccatggc tgtgctagga tccaccgtcc 14940
ccagccccaa ctgcagtcag catgttcatc atccttaggc ctctccgctt ctttctgcat 15000
gtttgtctgc ctcatgccct gctcattacc aactggtcag tccccactgc cctgcctgga 15060
gtgagctggt ttgattggct tagctaagct cccttgcctc tgctggccag gtcaccctgt 15120
gggtcaccag caaacctgtt gatggtccag tctgaacctg cttctccaca aagaacatgt 15180
tgcacccagc cctgcttctc tgagcagagg tttgggggctg agctgttcta gccagaaagg 15240
gacacaggt gtggcaggca ccatgatggg catatctaat gtgccgggaa aaacaatgag 15300
ctgctctccg tgctttgggc acctggttgg gagagggccc atctgtctga ctttctcctc 15360
ctggggctct cagcgtctcc gagaacctct gccagagctg tgtagaagtg gtttgcttgt 15420
ttcttaacac ttctgtgccc tatttctttc tgtacccaag aaaggaagta gactgttttg 15480
tagggacact gtcggggtga tgaatctgga cttactggaa tcatgaacca tgccaaggag 15540
gaaggagaaa ataggctatg gtgggtgtct tagttagggc tggctgctgt aacaaaatgc 15600
ctttagctga gtaatttaaa gcaagagaaa tgtattgctc agagtttggg aggctgggaa 15660
gtccaagatc agggtgccag cagattcagt gtctggtgaa ggctgatgct ctgtgacaaa 15720
ggtggcacct tctagctcca tcctcacatg gcagaagagg aacaagctc cctcagacct 15780
cttttctaag ggcgttagtc ccatgcatga gggctctaac atcacgactg agtcacctcc 15840
caaagccctc acctcccacc agcactgcac tggggattaa gtttcaatat gggaattttg 15900
gaggaacaca gaccttcaga ccacagcagc gggcttctcc tcatgtgccc cctgcctcac 15960
ttctagatgc cgcataatgt cagtgaaacc ccgtctctac taaaaataca aaaaattagc 16020
tgggtgtggt ggcacgtgcc tgtaatccca gctacttggg aggctgaggc aggagaatcg 16080
cttgaaccca ggaggcagag gttgcagtga cctgagatcg tgccactgca ctccagcctg 16140
ggcgacagag gaagactccg tcaagaaaaa agagaaaagg catcaggtat gccagggtgt 16200
gcgggaaaag gcatcgggta tgccagggcg tgtgggaaaa ggcatcgggt atgccagggt 16260
gtgtgggaaa aggcatcggg tatgccaggg catgtgggaa aaggtggtaa gattcctcag 16320
cctcccaggg ttgggaagcc tctggccgag tgaagcatac cctgggtggg ttttaagaca 16380
ccagctttcc agtccagctc agctgtggga tgtgggaaca tgagtcagtg gaacatgag 16440
aattggcttc cctgtggctc acaataatac ctactcctgc ctacttcatg ggacccgcat 16500
aagagctgag ggattccata gctcaggggt atgctgtaaa gacaagcact atgcacctgg 16560
gtgtggttct gaaactttct tgtgcagaag agtgagtagg ctgggcgag tcctgagaat 16620
```

7

```
gtgcatttct cacacacctc tgatgctgct gatgctctag tcccttggct ggcaagggta 16680
cctggttagt aggggccagg actctgtaat gccttccact tcagggttct ctgggctggt 16740
tttcctgact ccccaggaag cctttattca gcagagggaa ggtaggagtg agaggactac 16800
gctgtcagtg cttcacatac atcgtttaat ttatcccagc acagccctta ggagggaagc 16860
agtattctcc ttctacactt aagaaaatcg gcctggtgcg gaggctcatg cctataatcc 16920
cagcactgtg ggaagctgag gcgggaggat cgctggagcc caggagttca agactagtct 16980
aggcaataca gggagacctc atctctacaa aaaaaaaaa aattagctgg gcatggtggt 17040
gcacacttgc agtcccagct acctacccag aggctgagct gggaggattg cttgagtcct 17100
ggaggatcga ggctgcagtg agctatgatt gctccactac actccatccc tggcaacaga 17160
gtgagactcc atcccaaaaa aaaaaaaaaa ttgaagctag gagaagttga gacttgcctg 17220
aagttacaca gtaagtgcca gaaccaggac ttggaccagg tctttctgac tccaggccaa 17280
tggatgtttc ttccatgaca tatatagctc ttgaaactac ttctatctaa tatcacccac 17340
agtgctgtta aaaatacaga tttctgggcc tcaccctcaa attatgattc agtaggtcta 17400
ggcacgtcaa ggtcattgtt tttgtctttg ttttaagtca ccccaggtga ttctaaagcc 17460
gaagctctgc aaagcacacc ttgagaaaca gagaactctt gtgctctcgc tctcttgaca 17520
cttcaggtgc aaaactttg tcctaatgtc gttctcaaac ttacgcatgt gtgagaatca 17580
ctgtgagagc ttattgaaac tgattgcggg accccatacc tagagggcct gattctatag 17640
gtctgaggta aggcccaaga atttgcatat ttgcatttcg ttttcttttc ctttctttc 17700
ttttttttt ttttgagat gaagtctcac cctgtcgccc agactggagt gcagtggcat 17760
gatctcagct cactgcagcc tctgcctcct gggttaaagc gattctcccc acaccccaga 17820
cccgctcctg agtagctggg attacaggtg cccgccacca tgactagcta acgtttgtat 17880
ttttagtaga cacgggggtt tcaccatgtt ggccaggctg gtctcaaact cctgacctca 17940
ggtgatccac tcacctcagc ctcccaaggt cttgggatta ctggtgtgag ccaccgcgtg 18000
cggccagaat ttgcatttct aacaagtccc aggtgatgct gatgctgtgg gtccaggac 18060
acactttgag aacagcttgt tactcaggcg atatgtggac agtagcgtca tcttcacctg 18120
ggagcttcct gcagcatctc aggccttgcc ctacacctac cagatcagaa tctgcatttt 18180
aactcaatcc ccgcgtgatt ctcatgcacc tggaagtttg agaaatatga ccttagagga 18240
gccggaatgt gaaaccactg gaggcagaga tagatggaga atatctcttc ttctcacgga 18300
tactaaagat gcaacaaaaa gggctgactc tctgggtgtg cacccaggtg gggctgatga 18360
ccgaaaagag gccagatgtg gacagaggac tcttccctga gggaaggcag agagaactta 18420
ggaaaatctg aagaaaggag gtggcttcag aggaaaggca ttcatctggg ccataaaaca 18480
gtggagaagg tatcctgctg agagcacagg ggtggggagg gggtgccctg gagctgaagt 18540
cttcagtggg gggacagtga taggtgaaca cacatgtgaa taaacagttt gctaagcagc 18600
tgcgagggct ggccaaggtg agaaagcatc cgtctgcaga ggcctcaata aggccagtgt 18660
gttgactttg tcctgcagtg ctcagcagtg gaaaaaacca acagccacgc agggagaggg 18720
aaggagccac gatgggcacg ggttactggg gccagggctt gactggtagg tggacacagc 18780
tgaaggccca ggttgtgtgg aacagagcg cagaagcaat agattcctct tgaagatcct 18840
tgggctgtta acctttttta aatttaagag aggttgtgtg ggcggggagg gaggaaggaa 18900
aatccttcag aagacataga cttactctgt ttcttccatc atatgtgaat gcatatgaat 18960
agccaaaagg tgaataaaac acatgttccc aggtggccag tgagacctag gttgcaagat 19020
ggtgggggtgt gtgtgaggcc ggggagtgct gcgagccccg gaattcctca gccttagtcc 19080
cccgccacat agctaagaag tgagggagga ggtgagaagg agtcactgcc cagcctcact 19140
tccggtggag taccctgtct ccttgtcagt tctgtctctg gggacagttg cctgctttca 19200
cctctccctc catcccctct tctctcacag ggaaaaattc accttaatat tggaagttcc 19260
tctcctagca aagtccttct caggcaccca caggcaaaaa ggaaactaag cagagttagg 19320
gcttccaggc ctagccaact acacgactct cctcttgctt ccctaagaac cagcgcaagg 19380
ggcagcgtgg gttccagcat agatggacct gtgttggaat ctctgcacgt gctgtgctga 19440
ccctggctag ccattgacct ctctgagccc ttgtttcctt tccactaggc tctctgaggg 19500
caggggccat gtcttttttca ctgctctgtc tgcactgagc actgtgcagg gcacatagga 19560
agttcccata aatgtttgtg ggataaagga aataaaacct tctctcttcc tgtccccctt 19620
gtgatggctt tgcacaaggc actgtccttg gccaggtttg ctaggctagt gtgaggataa 19680
accaggtata ttacaaattg gagaaaattt ctcgttcttc ttggaagaag gtgctgtatc 19740
atgaaacaag aatgtcttga ttcccttcta tgccaggtac tggggagaaa caggtgcctg 19800
ataaccgttg atccaggcag aaataagcat actcctgctt cccaaggcct gatgcttctc 19860
tccttcctcc cttcctccct ccttctcttc actctttctc tgcacacatg gaagaatggc 19920
tgccaggcat tgcccatttg gaaaagtaca gctcaatgga tatgaatcag cttgggcagg 19980
cgagaaatga ttcacgtctg accaaatcga tttagttcag gttgcccgtt ctgcatcttt 20040
```

8

```
tttcccttgt aattaaatga tgattggtct tgatggtggg aaggaagaga cagaatttaa 20100
tttgtttgcc tttgtagaaa gctggggaca gcacagataa gggaagatgt ctcccatttg 20160
gcaaataact gatgcggagg tggagtggca gtggtgatgg ggatgctggt gccttcaggc 20220
cttctgggcc gggcagtgca gctggtggca gacggttcgg aactctacca tgttcccatc 20280
tgaaaactgt ggctgatcat gcccactcct gaccttgctc cagggagtac acaaagacgt 20340
aagcttaatt aacccaccag acgtagctct tgaatccctg ggcatagtgc ctgggtatag 20400
ttagagttgg ggagaggcat ggtcagcaaa acaacctccc tcatctctct gttgtcactc 20460
agagtcaagc tggctgctgc tggtggtgct gacttctctt gctgcagatt tctccaatat 20520
gtttctgccc tgcacgcatt tgccaaatcc cttcggtttc ttgtgtctcg tggcagctta 20580
gctcctccag cccttggatg aagaagcgtg ggaactcttt gcttcctttc cctcccgcag 20640
tgacatgcca tgccatgcca ctgcctcttc atctggtcct atgacagtca ctcataagca 20700
cccgcatgta cccggccctg cactagctca tgacagctgc agtcaattgg gccaggtgct 20760
gtatctcatc cggcctcctc agcaaccctc tgagatactg gtaatgtccc tgatgaagat 20820
atttactgag gcagaaatgg acgctcagtg aagcaaggtg cctgatgtta tagcaatgag 20880
ctatgagtgg ccagagggag gagataagct caggcctgac accaaagccc atgctccttc 20940
tagtcaacca cagtgcctcc tatggtgaat gagtgagtca gcaaccaaga cgcatgaggc 21000
cttctttttg gtgagccttg gctgggtgct gaggcttcag gtacaatcat gggttggaag 21060
agccctcctc tctctccaca gtctggcact atgacccctt ctggttatta acaaggcaaa 21120
gagagagagg gaagaaagca ggcaaataat gtgggttgct attcctagag attagaattt 21180
caggaaggat aaacacagcg ttctctccag aagtataaat aggaagactt cacacatgac 21240
tagaacgaga catgttttaa gtctgtcgag taaggcagtg atgaagtaga tttccccaga 21300
ttcactctcc ctcctctggg tcccccaggg cctttacttg tggcaacttt cagctcaggg 21360
agggaggaaa gcccctttca aagcttcaga tacttcctta aggtcagttt ctgcttaaag 21420
aaggccttta cattacttca tccctttgcc aaattaaact gaaaggaaac ctttcaagtg 21480
tgattgcctg gccctttcct gttcatttct cgtgggtacg ctttctaact ttctttcttt 21540
cttcctttct tcaggtgttg actttaagat gaagaccata gaggtagacg gcatcaaagt 21600
gcggatacag atctggtgag ctggggagga ggaggaggca gatgtaggag aagaggactt 21660
ctggctgctc cttagctgcc cctgccatgt gtaaaattcc taggcttcac ctgggataac 21720
tggccacctc tctgatggat ggaagcgaag tctcagaagc ccatctcttc ctataagcct 21780
taatctccaa cctctaagaa actttagggg attgactaca agcaccaaag ggcaggaatt 21840
agaaggaact ggcacactaa ccattgtgaa tttatctcag gattaggctt tgcccttggg 21900
ctgtgccaca ctatgttaag attggaagga aggaggctac acccccatc atttagggcg 21960
agaccctgag agagttcctc aggatagcat gatgaagttt ccacagtagc agagggtgct 22020
gctgtggctc tctgcctgag gtcttggaag cactgccttt gccagggttt agagctccct 22080
ctcaattcca cagcagtatg ggcactgcct tcagaggtcc cataggggact aggggtgtag 22140
cagcatcccc tgccaactcc catccaacca aatctggcca cagtggccag attccagaga 22200
gctgtccaag gcctgttctg gctgtggctt ctggtttctg ccaggagggc agttggcagg 22260
aggggccaag gccctgcagg cctggtcagc accagcacag atgaccaggc ctctgactgc 22320
agatccctgt ggggatccaa gcatccctgg tttttcaccc tttagctccc cagttttcc 22380
tacaagggga cagctctgct cttccctcc ccgtctgttc ccatggtccc tgctcctctg 22440
agggactggc tttctcctgc agggacactg cagggcagga gagataccag accatcacaa 22500
agcagtacta tcggcgggcc caggtaagcc accacattgg gggtttcaaa gtgggaagct 22560
gccacccaca ctcccagctc tgggtatttg agatgtctgt gccacggatc ccctaaatac 22620
agttcgcctg cttggaggag cgcagggcgt ctttcagctg ttcactgatc atttgtccgt 22680
ccattgttca tggcccactc actgcaggca ggccctgcc ctcacccctg acttccaccc 22740
tccatcctgg gtcaaagatc caggtcaaag catgtggtgt cttcctgctg tagagagttc 22800
tgtgatgggc ctgggaggcg gcagtggtgg ggtctgagag aagagatatt tctggatgct 22860
gagcagggag aatgggagag tgggacccaa cctttaagtt ccacggccc cttctggccc 22920
catgactgca ctctctctgt gcatatcaca tctctctatt tctctctctc tcagggggata 22980
tttttggtct atgacattag cagcgagcgc tcttaccagc acatcatgaa gtgggtcagt 23040
gacgtggatg aggtaggaga tgccacctca ctgccggggt gtggagaggg tgcctcaccg 23100
gggaaggcaa ggcgagggcc agatgggaag gcaaatgctt ccaggaagct ttgccttcca 23160
cagccctgga tgaagacctc tgggtgagta agacatgggg aagaaaccga agctgccatg 23220
ccctcactct ctataccctg ccaggcctcc acggctgtgt ctttcccgga aatgaattag 23280
ttccaagtct tccctgtgag cagcttcttt cctgaaatct tgggaccagg tggagttgca 23340
agattgggat ctagtcctgg ctctgcacaa tagctgtgga gccttgggaa gccatttgaa 23400
tcctctgggt ccccagttcc tgtagaatga gggctggact tacatccaat gtcctttcca 23460
```

9

```
gctctgatac cagtggtcta acccaaggaa gcaccagtct tagccagagt gtcttctacc 23520
ctaagctctc cccgtgatac ccttgaggtc agccatggca cttggggggag cctggcacct 23580
gcatccagtc ggcccaccct gtccctaggg ctctggaatt ggtggtgggc tggaggcagt 23640
gcagactctg tagggaaaat tgggggggca ggcagcactc actggctgtt ctgcccatcc 23700
tttgtccta gtacgcacca gaaggcgtcc agaagatcct tattgggaat aaggctgatg 23760
aggagcagaa acggcaggtg ggaagagagc aagggcagca ggtaagtgga gggaaaaggc 23820
aagtccaccc caggtcctct gctgggcctc cagggccagt cctgagcgtg gggacctagg 23880
ggtgtgttcc ccagtggcag gtcctcccac acgtccccag caccccaagg ccctggggga 23940
gtggccatcc tcggaaggct tgttgtctgg gtttcaggac agaagcccag agattcgggg 24000
tccatccaga aacaaagacg tcataggcag caactctccc aagtccaggt ccccaaatgc 24060
aggattgccc tctgcttaag agatcatccc cgtgttagta atgaaggact tcaagttgtc 24120
aacctcttct ctgacagcat ccaggcctag ctgccatgtt acggtcgaga aatgatctcc 24180
catcccaccc aacactcccc cactcctgtc cttcttaccc aggaaagagc cagggaggca 24240
aatgaggaga caaagagcca cagctggaga agccatgggg gcagaaaggg taggaggatg 24300
acgctgaggg aatgtccaag catgcaggga gaccatcctc ccagagagca gaaagaaata 24360
ttggttattt ttttttctt tctttctttt tttttttttt tttgagatgg agtctcgctc 24420
tgtcacccag gctagagtgc agtggcgcca tctcggctca ctgcaacctc tgcctcctga 24480
gttcaagcaa ttcttctgcc tcagcctccc aagtagctga gattacaggt gcatgccacc 24540
acgcctggct aattttttttg tatttttagt agagatgggg ttttgccata ttggccaggc 24600
cggtctcgaa ctcctaacct caggtgatcc acctgcctca gtctcccaaa gtgctgggat 24660
tacaggcgtg agccactgtg cccagccaag attggtattt ctgagataag ttatccactc 24720
agtccgtgga cctcaagagt tttcctctcc cttttcagtc aatagcgttc cattagtact 24780
taaaatgaaa ttgattgttt ggtataaaat ataagacatg gtcattgacc aatttgaaag 24840
tagaggcaaa gcctactagg atagtattta ttgagcactc tatgtgtggc actgtgctaa 24900
ggcaagcgct tttaagtgca cgacccccact gaatcatccc acaaccatgg atgggagaca 24960
cactcagtct cctttaacag aagataaagc tggggcttac agagaatgta caacttgtcc 25020
aaggtcacac agctagccat cagtggcagt gctgctattc aggtctggga ctgtgggact 25080
ccagagccca tgtttttttac gaggatgcca tactgccaca atggatggtg tctttatctc 25140
ctgatatatg attgtgtgtt gggaggcgtg gggtggcagc tggaagaatg gagaggcata 25200
tttgtggagg atcttccccc attctctgct accctctctt ggagctccca gtcccatctg 25260
agaaattatc tactctgaga aatcgtcaca acacagcatg gttgtgagtg cagtggcaga 25320
agcctgtgcc tggttgtatg ggcccctccc ctgccttact gactctcttt cagaaatgtc 25380
cttctcttgc agctggcgaa ggagtatggc atggacttct atgaaacaag tgcctgcacc 25440
aacctcaaca ttaaagaggt gagagccctg gtgaccaggc gcccgctctc tcgggctgag 25500
tccagcagag gtgggaggag gagccataag atggacctta tccctcaggc cgctgcaggg 25560
ttgccagggg agaggaggag acactggact aacctgtgcc cttttggtttc cagtcattca 25620
cgcgtctgac agagctggtg ctgcaggccc ataggaagga gctggaaggc ctccggatgc 25680
gtgccagcaa tgagttggca ctggcagagc tggaggagga ggagggcaaa cccgagggcc 25740
cagcgaactc ttcgaaaacc tgctggtgct gagtcctgtg tggggcaccc cacacgacac 25800
ccctcttccc tcaggaggcc cgtgggcaga caggggagcc ggggctttgc cctgctgctg 25860
tcctctcgtg tgatgaccct attgagtatc agtagccact actcccctg cctggccctg 25920
agagcggctc tgctgtcatc tcaagcagcc cctgtcccca gcccgtccac cctggagtgg 25980
tcttcttcag cctgtttccc cagccacagg cctgctacga cccccacgat gtgccgcaag 26040
cactgtctca ccatcccgca cccaccagac aacagccagg gctggagtcc aggccacttt 26100
cagctgctcc tttctccgtg catcgtgtct cttctctgct ttttctctct tcccccactt 26160
ctctttctct gacccctccc ctccggtgcg tttcgtatca aagctcctca aacccgtcc 26220
cccgtgtgtc ctgctgtgtg cagctcgctc tttccttcct tcctaagcta tccaagggga 26280
tggacccagg ctcgtgggga ggttccaccc ttggatccag gaagaaccct ccaccctgcc 26340
tcgtgggtgg gccaaaggct acagggtgct tcttcctctt cccccacccc cactgtccct 26400
catgtgccat gggcctgcct ccccagtgac ctgcgaaagt ggagcatcga ggtaggaggg 26460
aaacggcaac cagggagtcc tcgagcctgg ggctgcccta cctctaccca ttccccgacc 26520
agagctttgc ccttgcttgg ctgcccgcct gcctctttgg ggaactgagc tcagaggcag 26580
gtgcttcaga gaaggaaaca aaatgagggg tggcagggat aaaaagtcac ctccattctc 26640
tacctcccat gcagcatgaa cacaatttct ctccacctgg ctcccaaatt taaagatgtg 26700
gaccaaggcc tgtgggtact ccaggggcaa ggagagccct ggggtcagtg acactgtcag 26760
gccaaccatg cactccacaa aggggagcat ttgaaatga aggactagct cctatgtatc 26820
aggttaagag caagggagag ctggccaggg acagcagttt gcacagcaga ggggaatgta 26880
```

10

```
gcaacagcag ggcctcctag gccccatctt ccatttctta ggtaagaaga gcatttcctc 26940
agactcccag gcggaggact gagcctagcc ttcagcaacc aaggttctcc tgggacccaa 27000
agtttatggg agaagggcaa agacttcatg ggaagagaga aggaaggccc tgggtagaaa 27060
cgcttggtgc tgttctcttt ggcctttaag acaaagcgct catcttgccc tctacctcct 27120
gataggcttg agggtttgcc aaccacactg tggctacagg tggagggaag aggactcctt 27180
cctccagagt gctatgttca ggaagtttct ttaaccccat atggcccaag agtagctcgt 27240
aggaggccct ttaaagacgg aacaagtaat ttaccagttc tactggggtt cctgcccacc 27300
gtcccaaggt gggcgaggcc taggaagagg gtcattctta agccacacat tagctgcact 27360
gcgtggctgc agccaaaaca aagaactggg tgttgagtat tcatcaacta agaaccaaaa 27420
tccagggcac tcatatgtga aggataagaa cctcacttcc ttactcctcc aaaaagaagt 27480
ggggaaagaa ccatcaaacc tttcctcctg acttaccaaa ccaggaaaac agcaggagag 27540
ggtggctcag gacttaggga cagggtatag cttagatggt ggaaagcaaa ggagagcagg 27600
aagttgtaaa tcactggcta atgagaaaag gagacagcta actctaggat gaagctgtga 27660
ctaggctgga gttgcttcct tgaagatggg actccttggg tatcaagacc tatgccacat 27720
cacactgggg ctagggaagt aggtgatgcc agccctcaag tctgtcttca gccagggact 27780
tgagaagtta tattgggcag tggctccaat ctgtggacca gtatttcagc tttccctgaa 27840
gatcaggcag ggtgccattc attgtctttc tctcctagcc ccctcaggaa agaaggacta 27900
tatttgtact gtaccctagg ggttctggaa gggaaaacat ggaatcagga ttctatagac 27960
tgataggccc tatccacaag ggccatgact gggaaaaggt atgggagcag aaggagaatt 28020
gggatttttag ggtgcagcta cgctcaccct aaacttttgg tggcctgggg catgtcttga 28080
ggcccagact gttaaccagg ctctgctggc ctgtttactc gtcaccacct ctgcacctgc 28140
tgtcttgaga ctccatccag ccccaggcac gccacctgct cctgagcctc cactatctcc 28200
ctgtgacggg tgaacttcgt gtactgtgtc tcgggtccat atatgaattg tgagcagggt 28260
tcatctattt taaacacaga tgtttacaaa ataaagatta tttcaaacca ccggtgtggc 28320
tgcctggatg agtccttggg ggtaggtctc actcagaccc tggcagtgat gtgggaggga 28380
gagaggcagt gctggtagaa gcagctccag aagcaaaggc aacagcagta gagtgaccac 28440
ggaagcggca acattgtct tcccttctct accttcccta gtgccacctg cagggaggcc 28500
caaagcaaag ccccgttgcc ctgcattggg ctggcactgc agaaataaga tgaaacacag 28560
ttatcgagag gatgctgaac atctatgagc aggtttttaaa gccaagatga gtctcatctg 28620
tttgtgtggg tcaggaacgg gtcttcctga aggcatgagg tgggactgga taatctttca 28680
gatttgtgat tggataccc gggggagcag aggcagactg ggatctcagg actgcaggta 28740
tttcatactt tgggatatgg aattgatgga                                 28770


<210> 4
<211> 212
<212> PRT
<213> Rattus norvegicus

<400> 4
Met Ala Lys Gln Tyr Asp Val Leu Phe Arg Leu Leu Leu Ile Gly Asp
  1               5                  10                  15
Ser Gly Val Gly Lys Thr Cys Leu Leu Cys Arg Phe Thr Asp Asn Glu
          20                  25                  30
Phe His Ser Ser His Ile Ser Thr Ile Gly Val Asp Phe Lys Met Lys
          35                  40                  45
Thr Ile Glu Val Asp Gly Ile Lys Val Arg Ile Gln Ile Trp Asp Thr
      50                  55                  60
Ala Gly Gln Glu Arg Tyr Gln Thr Ile Thr Lys Gln Tyr Tyr Arg Arg
65                  70                  75                  80
Ala Gln Gly Ile Phe Leu Val Tyr Asp Ile Ser Ser Glu Arg Ser Tyr
                  85                  90                  95
Gln His Ile Met Lys Trp Val Ser Asp Val Asp Glu Tyr Ala Pro Glu
              100                 105                 110
Gly Val Gln Lys Ile Leu Ile Gly Asn Lys Ala Asp Glu Glu Gln Lys
          115                 120                 125
Arg Gln Val Gly Arg Glu Gln Gly Gln Gln Leu Ala Lys Glu Tyr Gly
      130                 135                 140
```

11

```
Met Asp Phe Tyr Glu Thr Ser Ala Cys Thr Asn Leu Asn Ile Lys Glu
145                 150                 155                 160
Ser Phe Thr Arg Leu Thr Glu Leu Val Leu Gln Ala His Arg Lys Glu
            165                 170                 175
Leu Asp Gly Leu Arg Thr Cys Ala Ser Asn Glu Leu Ala Leu Ala Glu
            180                 185                 190
Leu Glu Glu Asp Glu Gly Lys Thr Glu Gly Pro Ala Asn Ser Ser Lys
            195                 200                 205
Thr Cys Trp Cys
    210
```

<210> 5
<211> 218
<212> PRT
<213> Human

<400> 5
```
Met Ala Lys Gln Tyr Asp Val Leu Phe Arg Leu Leu Leu Ile Gly Asp
  1               5                 10                  15
Ser Gly Val Gly Lys Thr Cys Leu Leu Cys Arg Phe Thr Asp Asn Glu
            20                  25                  30
Phe His Ser Ser His Ile Ser Thr Ile Gly Val Asp Phe Lys Met Lys
            35                  40                  45
Thr Ile Glu Val Asp Gly Ile Lys Val Arg Ile Gln Ile Trp Asp Thr
            50                  55                  60
Ala Gly Gln Glu Arg Tyr Gln Thr Ile Thr Lys Gln Tyr Tyr Arg Arg
65                  70                  75                  80
Ala Gln Gly Ile Phe Leu Val Tyr Asp Ile Ser Ser Glu Arg Ser Tyr
                85                  90                  95
Gln His Ile Met Lys Trp Val Ser Asp Val Asp Glu Tyr Ala Pro Glu
            100                 105                 110
Gly Val Gln Lys Ile Leu Ile Gly Asn Lys Ala Asp Glu Glu Gln Lys
            115                 120                 125
Arg Gln Val Gly Arg Glu Gln Gly Gln Gln Lys Cys Pro Ser Leu Gln
            130                 135                 140
Leu Ala Lys Glu Tyr Gly Met Asp Phe Tyr Glu Thr Ser Ala Cys Thr
145                 150                 155                 160
Asn Leu Asn Ile Lys Glu Ser Phe Thr Arg Leu Thr Glu Leu Val Leu
                165                 170                 175
Gln Ala His Arg Lys Glu Leu Glu Gly Leu Arg Met Arg Ala Ser Asn
            180                 185                 190
Glu Leu Ala Leu Ala Glu Leu Glu Glu Glu Gly Lys Pro Glu Gly
            195                 200                 205
Pro Ala Asn Ser Ser Lys Thr Cys Trp Cys
    210                 215
```

<210> 6
<211> 4
<212> PRT
<213> Homo sapien

<400> 6
Asn Ser Ser Lys 1

<210> 7

12

```
<211> 4
<212> PRT
<213> Homo sapien

<400> 7
Thr Asp Asn Glu 1

<210> 8
<211> 4
<212> PRT
<213> Homo sapien

<400> 8
Ser Asp Val Asp 1

<210> 9
<211> 9
<212> PRT
<213> Homo sapien

<400> 9
Lys Trp Val Ser Asp Val Asp Glu Tyr 1                5

<210> 10
<211> 6
<212> PRT
<213> Homo sapien

<400> 10
Gly Val Gly Lys Thr Cys 1                5

<210> 11
<211> 6
<212> PRT
<213> Homo sapien

<400> 11
Gly Gln Gln Leu Ala Lys 1                5

<210> 12
<211> 8
<212> PRT
<213> Homo sapien

<400> 12
Gly Asp Ser Gly Val Gly Lys Thr 1                5

<210> 13
<211> 14
<212> PRT
<213> Homo sapien

<400> 13
Leu Leu Leu Ile Gly Asp Ser Gly Val Gly Lys Thr Cys Leu 1                5
10

<210> 14
```

<211> 506
<212> DNA
<213> Homo sapien

<220>
<221> variation
<222> (206)...(206)
<223> 't' may be either present or absent

<400> 14
gctcaagatt gcacagctgg tgagtggtga cactgggact ggaacccaag tgtgccttac 60
tccagagccc ttggcatgca cctgaaaccc catgtaagcc cactgtggag acgcgcacct 120
cgaaataatg gaatccacta catcagttcc tttagctttc tgtgtaatca gagtagctag 180
caggctcggg atttcgcccc ccggcttttt tttttttttt tttttgagac agagttttgc 240
tcttgttgcc caggctggag tgcaatggcg caatctcggc tcaccgcaac cttcgcctct 300
caggttcaag caattctcct gcctcagcct cccgagtagc tgggattaca ggcaccggcc 360
accacgccca gctaattttt ttatattttt agtagagatg gggtttcacc atgttggcca 420
ggctggtctt gaacttttcc cctcttatta taattcagac acttaacctg aaatatacct 480
tttcaaatga agtaaatggg cttacc 506

<210> 15
<211> 601
<212> DNA
<213> Homo sapien

<400> 15
tattaaggga cttgggattc tcccttatct tgggcgtgtt tttcagcatt aactaaaact 60
taaaggaaag agttggatgg tcaagaaaag cttttTccTt aagTgaTaTg gacagTTTcT 120
caaggaggta gaaggggcag ccaggagaca aatcaaggag ccaacgaaaT gagtgcTacc 180
aagTcaTagT caTTcgcTTa TTTTTaaaaa aTgcgTgTcc TgTaTgccag gcTcTgcacT 240
gagaccgaga gaTTccaaga TgaaTaaTac cTacagTcac TgTTcTcaaa TTgTgcaTTa 300
yctaaaacac aTTacaTgac caTgcTggcc acTgaTcgag gcaccTTTcc caggggcTTT 360
ttttgtgaat taagaaaaca aggtaattca ccagttattg ccaagatagt ttggcttctt 420
ggctcatgtg gatatcacct aggccagtac ttttgtgatt tactgtgtac tccactttaa 480
cggcctgcga tcttctagag aagaacccgc cagggagcag tgagaggcct ccctggtaga 540
ctgagacact gactgtccct ccccctatcc ttttcgtctt tctggccagc agaccagcag 600g
601

<210> 16
<211> 601
<212> DNA
<213> Homo sapien

<400> 16
atgccaggtg ccatgctaag atttggggac acagtggtga ccaaaacaga cagaaaccaa 60
ggagctggct tacattccaa gggagtgcat aggaagctgt gtttcatttc agtttctgct 120
ctagtacccc cctttccctg gcagtgccag ggtctgagaa ggaagagtga ggtggtgagg 180
aggtgtgaag cagtggggtg acctgagagg agaggatggg gtggctttgc ctcaaggctt 240
gggccctgc taggtgtcgc tctgcctcag gcctctgttt ctcctcctga cacaggcaca 300
ractcggcct cccacccctt ccccaaggac atgaccttgg gaaggaacat atctgaagcc 360
cgcggagggt ttccgctgct gtgcatctgt ccacagatc cgcagatgca cccacagctg 420
ggagcaccgg ttcctcccgc ctacctgcac tccctggttt ctgttccttc ctcctcctcc 480
ttccttctcc ccgctcccca gacaggctgg tgatgagctt tataacatga aagctgatat 540
ttggccatta tccttctacc ctgattgcca gctcttctca gagtgccttc ttctgtaatc 600c
601

<210> 17

14

<211> 601
<212> DNA
<213> Homo sapien

<400> 17
ctggtgaagg ctttgaagag gaagtgacat ttgagtggag tcttgaagac taggcaggat
60tctccagggg ccctgggtgt gggggaagca cacatcctct tccctgtagg aggtgctgtg
120gagaacacct ccagtggggc tgctactctt cagccttgct ggggccagct ggagtggcca
180caccatggtc acaccagctg aagttcaaga agccccttgc caggagattg ctttgctggc
240tctgggtgag ggcaggtgca tctggaagcc cccttctttc taagatgttt gctcctgagt
300ytctatgtcc tagtcttttc ttccctgaac cttttgctac cagtcagcac agccctgcct
360gagaaggagg ctggaggagt gagtggtcag tagcctggtg ggtcttggct gcctctgtgg
420tgcccgctgg cctaagtagc aggcttaggg aggcgagacc cagttccagg ggctgccaat
480ggggagcgag atggggtggc tggagcacac tgcacatgtc accaaggctc tagggaggtc
540tgtgcacaag gcagtgggaa aagcaagggg aagacccagc ctggtcaaca tggtgaaacc   600c
601

<210> 18
<211> 601
<212> DNA
<213> Homo sapien

<400> 18
agatttgggt gaggacacag ccaaaccata tcagctcccg ggatccctgt gtgaatgggg
60tcttttttgg tgtttgaggg ctgcacaggg tgacctcttt agaggtgacc tcctgccaca
120acccacagga ggtgcacatg gcccacacat gctggtttcc tgcagtggga ggggctgggg
180cactcctggg acctgtgctt ggtaactgga gctggcctgg ccctggggat tgggtgtctg
240ccttgggttt caggtgtatt aggttgttcc tcgttgtgga gtctcattac taatgaaaag
300ytcaggtcgc actgctggtc ctttgggctg tggttgatcc tggtgataac atttggcacc
360cagaggcagc cctgtttcca ctgaagcatg cggagcttgg ctggcaggca ggcaagctgg
420cagctgccct taacccatga ggtgctggcc cgctagtagg cacaccctac ctgtgccaga
480attgaggttg tagccagact ccaggagcca tctgggcccc acagggggcg gcatttcctc
540ttttttgttga aacattccag ccaagtgctg gcttgggctt catctctctg tcccactctc   600c
601

<210> 19
<211> 601
<212> DNA
<213> Homo sapien

<400> 19
ccctgtgtta tgggttttac accttatctc acaatcttaa aaaaaaaatt ctctgagaat
60cctctgtcac ccccacttta caggtgagga aactgaggca aagataggct aactggcttc
120cccaacacca tgcaggtaat tagtgataaa ggcagggttg gaaccaaact tgacctccca
180attgtgctct taatggccag gacactctgt gtcttgagcc acacttcctc catgttttct
240agggctttct agggaggcag acagtgatgg gaaggggtgt tctttagtgt ggatgtgccc
300ygcctgctcc tttctgtaag cgtcacagca cctccactgc tgtactgggg aggcaccaag
360ttttttccctg tttgcccacc caaggcgagc tagcttagga gtcacgtgag tgctgggtgt
420ctcgcctgct gcatccctct atcctgcccc tgccccggt gcccagagga gggccctgcc
480tgtcttccca gttctccaac agcagcgctg tcccagcacc ctcgggctcc agttgtggcc
540tggcagctgc tggggcagac accatacaga cagagtcaca gcaggaagag gatggggccc   600a
601

<210> 20
<211> 601
<212> DNA
<213> Homo sapien

15

<400> 20
ggaaggggtg ttctttagtg tggatgtgcc ctgcctgctc ctttctgtaa gcgtcacagc
60acctccactg ctgtactggg gaggcaccaa gtttttccct gtttgcccac ccaaggcgag
120ctagcttagg agtcacgtga gtgctgggtg tctcgcctgc tgcatccctc tatcctgccc
180ctgcccccgg tgcccagagg agggccctgc ctgtcttccc agttctccaa cagcagcgct
240gtcccagcac cctcgggctc cagttgtggc ctggcagctg ctggggcaga caccatacag
300mcagagtcac agcaggaaga ggatgggggcc agggctgct gcctcaggcc atggctgcat
360ggcaccatca gttgattgag gagctttct tgccaatgtc tgaggcatca ggtggcagga
420cacgtctccc tgctcttaag cctcaggcat gcagcccttc ttatgctctc tggggtgagg
480gggagatccc cctcatggaa ttgctttttt tttttttttt ttttttttga cagggtcc
540tgctctgtca ctcaggctgg agtgcagcct caacctccca gactcaagtg atcctcctgc   600c
601

<210> 21
<211> 601
<212> DNA
<213> Homo sapien

<220>
<221> variation
<222> (301)...(301)
<223> 't' may be either present or absent

<400> 21
tctccaacag cagcgctgtc ccagcaccct cgggctccag ttgtggcctg gcagctgctg 60
gggcagacac catacagaca gagtcacagc aggaagagga tggggcccag ggctgctgcc 120
tcaggccatg gctgcatggc accatcagtt gattgaggag ctttttcttgc caatgtctga 180
ggcatcaggt ggcaggacac gtctccctgc tcttaagcct caggcatgca gcccttctta 240
tgctctctgg ggtgaggggg agatccccct catggaattg cttttttttt tttttttttt 300
ttttgagac agggtcctgc tctgtcactc aggctggagt gcagcctcaa cctcccagac 360
tcaagtgatc ctcctgcctc agcctcccga gtagctggga ccacaggtgg acaccatcac 420
acctgggttt ttttgttttt tgttttttgt tttctagaga tggggtctca ctttcttgct 480
cagtctggtc tcgaactcct gggcgcaagc agtcctccca cctcgtcttc ccaaagtgtt 540
tggattacag gtgtgagcca ctgtgcttgg ccttttttatt tatttagaat ttgttttgga 600
a   601

<210> 22
<211> 601
<212> DNA
<213> Homo sapien

<400> 22
ggatgtttct tccatgacat atatagctct tgaaactact tctatctaat atcacccaca
60gtgctgttaa aaatacagat ttctgggcct caccctcaaa ttatgattca gtaggtctag
120gcacgtcaag gtcattgttt ttgtctttgt tttaagtcac cccaggtgat tctaaagccg
180aagctctgca aagcacacct tgagaaacag agaactcttg tgctctcgct ctcttgacac
240ttcaggtgca aaacttttgt cctaatgtcg ttctcaaact tacgcatgtg tgagaatcac
300ygtgagagct tattgaaact gattgcggga ccccatacct agagggcctg attctatagg
360tctgaggtaa ggcccaagaa tttgcatatt tgcatttcgt tttctttttcc tttctttttct
420ttttttttttt ttttgagatg aagtctcacc ctgtcgccca gactggagtg cagtggcatg
480atctcagctc actgcagcct ctgcctcctg ggttaaagcg attctcccca caccccagac
540ccgctcctga gtagctggga ttacaggtgc ccgccaccat gactagctaa cgtttgtatt   600t
601

<210> 23
<211> 601

16

<212> DNA
<213> Homo sapien

<400> 23
aggcacgtca aggtcattgt ttttgtcttt gttttaagtc accccaggtg attctaaagc
60cgaagctctg caaagcacac cttgagaaac agagaactct tgtgctctcg ctctcttgac
120acttcaggtg caaaactttt gtcctaatgt cgttctcaaa cttacgcatg tgtgagaatc
180actgtgagag cttattgaaa ctgattgcgg daccccatac ctagagggcc tgattctata
240ggtctgaggt aaggcccaag aatttgcata tttgcatttc gtttttctttt cctttcttttt
300ytttttttttt tttttttgaga tgaagtctca ccctgtcgcc cagactggag tgcagtggca
360tgatctcagc tcactgcagc ctctgcctcc tgggttaaag cgattctccc cacacccccag
420acccgctcct gagtagctgg gattacaggt gcccgccacc atgactagct aacgtttgta
480ttttttagtag agacggggggt ttcaccatgt tggccaggct ggtctcaaac tcctgacctc
540aggtgatcca ctcacctcag cctcccaagg tcttgggatt actggtgtga gccaccgcgt   600g
601

<210> 24
<211> 601
<212> DNA
<213> Homo sapien

<400> 24
tgcagcctct gcctcctggg ttaaagcgat tctccccaca ccccagaccc gctcctgagt
60agctgggatt acaggtgccc gccaccatga ctagctaacg tttgtatttt tagtagagac
120gggggtttca ccatgttggc caggctggtc tcaaactcct gacctcaggt gatccactca
180cctcagcctc caaggtctt gggattactg gtgtgagcca ccgcgtgcgg ccagaatttg
240catttctaac aagtcccagg tgatgctgat gctgtgggtc cagggacaca ctttgagaac
300hgcttgttac tcaggcgata tgtggacagt agcgtcatct tcacctggga gcttcctgca
360gcatctcagg ccttgcccta cacctaccag atcagaatct gcatttttaac tcaatccccg
420cgtgattctc atgcacctgg aagtttgaga aatatgacct tagaggagcc ggaatgtgaa
480accactggag cagagatag atggagaata tctcttcttc tcacggatac taaagatgca
540acaaaaaggg ctgactctct gggtgtgcac ccaggtgggg ctgatgaccg aaaagaggcc   600a
601

<210> 25
<211> 601
<212> DNA
<213> Homo sapien

<400> 25
tgtgtgtgag gccggggagt gctgcgagcc ccggaattcc tcagccttag tcccccgcca
60catagctaag aagtgaggga ggaggtgaga aggagtcact gcccagcctc acttccggtg
120gagtaccctg tctccttgtc agttctgtct ctggggacag ttgcctgctt tcacctctcc
180ctccatcccc tcttctctca cagggaaaaa ttcaccttaa tattggaagt tcctctccta
240gcaaagtcct tctcaggcac ccacaggcaa aaaggaaact aagcagagtt agggcttcca
300kgcctagcca actacacgac tctcctcttg cttccctaag aaccagcgca aggggcagcg
360tgggttccag catagatgga cctgtgttgg aatctctgca cgtgctgtgc tgaccctggc
420tagccattga ccctctgag cccttgtttc ctttccacta ggctctctga gggcaggggc
480catgtctttt tcactgctct gtctgcactg agcactgtgc agggcacata ggaagttccc
540ataaatgttt gtgggataaa ggaaataaaa ccttctctct tcctgtcccc cttgtgatgg   600c
601

<210> 26
<211> 601
<212> DNA
<213> Homo sapien

17

<400> 26
aaagtccttc tcaggcaccc acaggcaaaa aggaaactaa gcagagttag ggcttccagg
60cctagccaac tacacgactc tcctcttgct tccctaagaa ccagcgcaag gggcagcgtg
120ggttccagca tagatggacc tgtgttggaa tctctgcacg tgctgtgctg accctggcta
180gccattgacc tctctgagcc cttgtttcct ttccactagg ctctctgagg gcaggggcca
240tgtctttttc actgctctgt ctgcactgag cactgtgcag ggcacatagg aagttcccat
300raatgtttgt gggataaagg aaataaaacc ttctctcttc ctgtccccct tgtgatggct
360ttgcacaagg cactgtcctt ggccaggttt gctaggctag tgtgaggata aaccaggtat
420attacaaatt ggagaaaatt tctcgttctt cttggaagaa ggtgctgtat catgaaacaa
480gaatgtcttg attcccttct atgccaggta ctggggagaa acaggtgcct gataaccgtt
540gatccaggca gaaataagca tactcctgct tcccaaggcc tgatgcttct ctccttcctc   600c
601

<210> 27
<211> 601
<212> DNA
<213> Homo sapien

<400> 27
ccttggatga agaagcgtgg gaactctttg cttcctttcc ctcccgcagt gacatgccat
60gccatgccac tgcctcttca tctggtccta tgacagtcac tcataagcac ccgcatgtac
120ccggccctgc actagctcat gacagctgca gtcaattggg ccaggtgctg tatctcatcc
180ggcctcctca gcaaccctct gagatactgg taatgtccct gatgaagata tttactgagg
240cagaaatgga cgctcagtga agcaaggtgc ctgatgttat agcaatgagc tatgagtggc
300yagagggagg agataagctc aggcctgaca ccaaagccca tgctccttct agtcaaccac
360agtgcctcct atggtgaatg agtgagtcag caaccaagac gcatgaggcc ttctttttgg
420tgagccttgg ctgggtgctg aggcttcagg tacaatcatg ggttggaaga gccctcctct
480ctctccacag tctggcacta tgaccccttc tggttattaa caaggcaaag agagagaggg
540aagaaagcag gcaaataatg tgggttgcta ttcctagaga ttagaatttc aggaaggata   600a
601

<210> 28
<211> 601
<212> DNA
<213> Homo sapien

<400> 28
ttctctgacc cctcccctcc ggtgcgtttc gtatcaaagc tcctcaaacc ccgtcccccg
60tgtgtcctgc tgtgtgcagc tcgctctttc cttccttcct aagctatcca aggggatgga
120cccaggctcg tggggaggtt ccacccttgg atccaggaag aaccctccac cctgcctcgt
180gggtgggcca aaggctacag ggtgcttctt cctcttcccc cacccccact gtccctcatg
240tgccatgggc ctgcctcccc agtgacctgc gaaagtggag catcgaggta ggagggaaac
300rgcaaccagg gagtcctcga gcctggggct gccctacctc tacccattcc ccgaccagag
360ctttgccctt gcttggctgc ccgcctgcct ctttggggaa ctgagctcag aggcaggtgc
420ttcagagaag gaaacaaaat gaggggtggc aggataaaa agtcacctcc attctctacc
480tcccatgcag catgaacaca atttctctcc acctggctcc caaatttaaa gatgtggacc
540aaggcctgtg ggtactccag gggcaaggag agccctgggg tcagtgacac tgtcaggcca   600a
601

<210> 29
<211> 601
<212> DNA
<213> Homo sapien

<400> 29
acccctcccc tccggtgcgt ttcgtatcaa agctcctcaa accccgtccc ccgtgtgtcc
60tgctgtgtgc agctcgctct ttccttcctt cctaagctat ccaaggggat ggacccaggc

18

120tcgtgggggag gttccaccct tggatccagg aagaaccctc caccctgcct cgtgggtggg
180ccaaaggcta cagggtgctt cttcctcttc ccccacccccc actgtccctc atgtgccatg
240ggcctgcctc .cccagtgacc tgcgaaagtg gagcatcgag gtaggaggga aacggcaacc
300rgggagtcct cgagcctggg gctgccctac ctctacccat tccccgacca gagctttgcc
360cttgcttggc tgcccgcctg cctctttggg gaactgagct cagaggcagg tgcttcagag
420aaggaaacaa aatgaggggt ggcagggata aaaagtcacc tccattctct acctcccatg
480cagcatgaac acaatttctc tccacctggc tcccaaattt aaagatgtgg accaaggcct
540gtgggtactc caggggcaag gagagccctg gggtcagtga cactgtcagg ccaaccatgc   600a
601

<210> 30
<211> 601
<212> DNA
<213> Homo sapien

<400> 30
gccagggact tgagaagtta tattgggcag tggctccaat ctgtggacca gtatttcagc
60tttccctgaa gatcaggcag ggtgccattc attgtctttc tcctagcc ccctcaggaa
120agaaggacta tatttgtact gtaccctagg ggttctggaa gggaaaacat ggaatcagga
180ttctatagac tgataggccc tatccacaag ggccatgact gggaaaaggt atgggagcag
240aaggagaatt gggattttag ggtgcagcta cgctcaccct aaacttttgg tggcctgggg
300yatgtcttga ggcccagact gttaaccagg ctctgctggc ctgtttactc gtcaccacct
360ctgcacctgc tgtcttgaga ctccatccag ccccaggcac gccacctgct cctgagcctc
420cactatctcc ctgtgacggg tgaacttcgt gtactgtgtc tcgggtccat atatgaattg
480tgagcagggt tcatctattt taaacacaga tgtttacaaa ataaagatta tttcaaacca
540ccggtgtggc tgcctggatg agtccttggg ggtaggtctc actcagaccc tggcagtgat   600g
601

<210> 31
<211> 601
<212> DNA
<213> Homo sapien

<400> 31
ggcagtggct ccaatctgtg gaccagtatt tcagctttcc ctgaagatca ggcagggtgc
60cattcattgt ctttctctcc tagcccctc aggaaagaag gactatattt gtactgtacc
120ctaggggttc tggaagggaa aacatggaat caggattcta tagactgata ggccctatcc
180acaagggcca tgactgggaa aaggtatggg agcagaagga gaattgggat tttagggtgc
240agctacgctc accctaaact tttggtggcc tggggcatgt cttgaggccc agactgttaa
300scaggctctg ctggcctgtt tactcgtcac cacctctgca cctgctgtct tgagactcca
360tccagcccca ggcacgccac ctgctcctga gcctccacta tctccctgtg acgggtgaac
420ttcgtgtact gtgtctcggg tccatatatg aattgtgagc agggttcatc tattttaaac
480acagatgttt acaaaataaa gattatttca aaccaccggt gtggctgcct ggatgagtcc
540ttgggggtag gtctcactca gaccctggca gtgatgtggg agggagagag gcagtgctgg   600t
601

<210> 32
<211> 601
<212> DNA
<213> Homo sapien

<400> 32
ctgctggcct gtttactcgt caccacctct gcacctgctg tcttgagact ccatccagcc
60ccaggcacgc acctgctcc tgagcctcca ctatctccct gtgacgggtg aacttcgtgt
120actgtgtctc gggtccatat atgaattgtg agcagggttc atctatttta aacacagatg
180tttacaaaat aaagattatt tcaaaccacc ggtgtggctg cctggatgag tccttggggg
240taggtctcac tcagaccctg gcagtgatgt gggagggaga gaggcagtgc tggtagaagc

19

```
300rgctccagaa gcaaaggcaa cagcagtaga gtgaccacgg aagcggcaaa cattgtcttc
360ccttctctac cttccctagt gccacctgca gggaggccca aagcaaagcc ccgttgccct
420gcattgggct .ggcactgcag aaataagatg aaacacagtt atcgagagga tgctgaacat
480ctatgagcag gttttaaagc caagatgagt ctcatctgtt tgtgtgggtc aggaacgggt
540cttcctgaag gcatgaggtg ggactggata atctttcaga tttgtgattg gatacctcgg          600g
601
```

```
<210> 33
<211> 601
<212> DNA
<213> Homo sapien
```

```
<400> 33
gcacgccacc tgctcctgag cctccactat ctccctgtga cgggtgaact tcgtgtactg          60
tgtctcgggt ccatatatga attgtgagca gggttcatct attttaaaca cagatgttta         120
caaaataaag attatttcaa accaccggtg tggctgcctg gatgagtcct tggggggtagg         180
tctcactcag accctggcag tgatgtggga gggagagagg cagtgctggt agaagcagct         240
ccagaagcaa aggcaacagc agtagagtga ccacggaagc ggcaaacatt gtcttccctt         300
stctaccttc cctagtgcca cctgcaggga ggcccaaagc aaagccccgt tgccctgcat         360
tgggctggca ctgcagaaat aagatgaaac acagttatcg agaggatgct gaacatctat         420
gagcaggttt taaagccaag atgagtctca tctgtttgtg tgggtcagga acgggtcttc         480
ctgaaggcat gaggtgggac tggataatct ttcagatttg tgattggata cctcgggggga         540
gcagaggcag actgggatct caggactgca ggtatttcat actttgggat atggaattga         600
t                                                                           601
```